UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

Memorandum

Subject: Annual Monitoring Network Plans

From: Matthew Lakin, Chief
Air Quality Analysis Office, Air Division, Region 9

To: Region 9 Air Pollution Control Agencies

This document outlines the information that is required to be submitted to EPA Region 9 as part of the Annual Monitoring Network Plans due by July 1st of each year. We thank you for the time and attention you pay each year while developing these documents. The plans allow the public and EPA to understand your monitoring network, and provide an opportunity for agencies to reflect on their existing networks.

Over the years, many agencies have refined their plans and added information to create a more comprehensive picture of their monitoring networks. Recently, it has become apparent that a lack of detail in these network plans may result in legal vulnerabilities. Lack of information sufficient to determine compliance with 40 CFR Part 58.10 may therefore result in EPA's disapproval of all or a portion of a plan. Given this new attention to network plans, we thought it appropriate to send an update to EPA Region 9's "Annual Monitoring Network Plan for 2007" memo. This updated memo provides information reflecting changes in regulation since 2007, and highlights plan elements that are not always addressed to the desired level of detail. We recognize that this memo is being sent only a few months before plans are due, and that agencies typically produce plans well ahead of July 1st in order to provide time for internal review and public notice and comment. We hope that you will be able to address the elements noted in this memo in your plans submitted this year, and will expect that all elements will be addressed in plans submitted in 2013.

In addition, an Annual Monitoring Network Plan template and CFR Elements appendix are attached. The template provides an optional network plan format that incorporates elements required to be included in network plans, including an example detailed site information table that includes required site-level information. State and local agencies are not required to follow this exact format, but must ensure that their network plans cover all required information outlined in the template and the appendix. EPA strongly encourages all agencies to, at a minimum, include the tables suggested in the template. The appendix provides the regulatory basis for the annual network plan. Agencies are also encouraged to include any additional information that describes their ambient air monitoring network.

EPA has noticed that the following plan elements are not always addressed to the desired level of detail:

- Minimum Monitoring Requirements. Agencies should provide the information detailed in the attached table, including information on design values and CBSAs/MSAs.
- Collocation. It is often difficult to tell from reading network plans whether collocation requirements are being met. See attachments for collocation requirements and suggestions for how to address these requirements in your network plans.
- Detailed Site Information tables. While all agencies have included site information tables, often information is missing, or the incorrect type of information is provided. See attached template for a complete list, and specific examples below.
    - Monitoring objective, site type, monitor type, method code, parameter code and POC should be included for each monitor.
    - Sampling Frequency for $PM_{2.5}$ and PM_{10} sites. Sampling frequencies should be determined in accordance with 40 CFR 58. For easy reference, EPA is enclosing attachments that describe how sampling frequency should be determined for each site.
    - $PM_{2.5}$ information. When filling out the detailed site information tables, please ensure that your $PM_{2.5}$ information is correct. This includes clearly identifying method code, FEM/FRM/non-FEM/non-FRM status, which monitors are meeting collocation requirements, , and whether data are comparable to the NAAQS. If an FRM or FEM monitor is designated as not comparable to the NAAQS (specified by a non-regulatory monitor type in AQS), please provide adequate justification for choosing this monitor type (see attachments).

In addition, there have been many changes to monitoring requirements since 2007. The specific requirements as of February 2012 are included in the CFR Elements appendix (attached). General changes include new:

- NCore requirements (stations operational by January 1, 2011)
- Pb requirements: source-oriented (1.0 tpy or greater – monitors by January 1, 2010; 0.50 tpy – monitors by December 27, 2011), airport study monitors (by December 27, 2011), at urban NCore stations (population of 500,000 or greater – by January 1, 2012)
- SO_2 requirements: number of required monitors is based on the Population Weighted Emissions Index (PWEI). (operational by January 1, 2013)
- NO_2 requirements (address in July 1, 2012 plan)
- CO requirements: in CBSAs of 2.5 million persons or more (address in July 1, 2014 plan); other CO monitors (address in July 1, 2016 plan)

Attachments

Attached are several documents outlining requirements and providing clarification on specific plan elements. State and local agencies are not required to include the exact tables included in the attachments, however, EPA strongly encourages all agencies to include the tables. Regardless of how the information is presented, agencies must ensure that their network plans include all required information. The appendix provides the regulatory basis for the annual

network plan. Agencies are also encouraged to include additional information that describes the ambient air monitoring network. Attachments:

1. Outline of CFR Requirements
2. Site and monitor type description
3. Sampling frequency information – PM_{10} and $PM_{2.5}$
4. Collocation information for PM_{10}, $PM_{2.5}$, and Pb
5. $PM_{2.5}$ Reference Memos
6. Template for minimum monitoring requirements table
7. Template for detailed site information table

General Network Plan Overview

Submittal date: States must submit an annual network plan on July 1, 2007 to the Regional Administrator. Please cc the Air Quality Analysis Office Chief (Matthew Lakin).

Public Inspection/Comment: The annual monitoring network plan must be made available for public inspection (website, hardcopy posting in libraries and public offices, and/or newspaper listing) for at least 30 days prior to submission to EPA. Although not required, EPA recommends soliciting comments concurrent with the public inspection period. Evidence of public inspection must be submitted. If an opportunity for public comment had been provided, comments received must be included in the annual network plan submission.

Types of Monitors to include in plan: Include establishment and maintenance of an air quality surveillance system that consists of the following:

1. SLAMS
2. FRM
3. FEM
4. ARM
5. NCORE
6. STN
7. PAMS
8. SPM

Network modifications: A network plan that proposes SLAMS network modifications including new monitoring sites is subject to the approval of the EPA Regional Administrator according to 40 CFR 58.14. If you are requesting approval for modifications as part of your network plan, please include a demonstration of how the criteria in 40 CFR 58.14 are met.

We look forward to your network plan submittals. Please contact myself, Matthew Lakin, at 415.972.3851 or lakin.matthew@epa.gov, or any of my monitoring team staff, should you have any questions, or should you desire a copy of the 2007 memo EPA Region 9 sent regarding network plans.

APPENDIX

I. Regulatory Basis: 40 CFR 58.10

(a) (1) Beginning July 1, 2007, the state agency shall adopt and submit to the Regional Administrator an annual monitoring network plan which shall provide for the establishment and maintenance of an air quality surveillance system that consists of a network of SLAMS monitoring stations including FRM, FEM, and ARM monitors that are part of SLAMS, NCORE stations, STN stations, State speciation stations, SPM stations, and/or, in serious, severe and extreme ozone nonattainment areas, PAMS stations, and SPM monitoring stations. The plan shall include:

- A statement of purposes for each monitor.
- Evidence that siting andoperation of each monitor meets the requirements of appendices A, C, D, and E, where applicable (note: see section II for details).
- Plan shall be made available for public inspection for at least 30 days prior to submission to EPA.

(a) (2)
List of modifications to SLAMS network including new monitoring sites. Submit received comments (if any) from public inspection period and identify whether changes were made to the plan subsequent to the comment opportunity.
(a) (3) A plan for establishing required NCore multipollutant stations shall be submitted to the Administrator not later than July 1, 2009. The plan shall provide for all required stations to be operational by January 1, 2011.
(a)(4)

- A plan for establishing source-oriented Pb monitoring sites in accordance with the requirements of appendix D to this part for Pb sources emitting 1.0 tpy or greater shall be submitted to EPA no later than July 1, 2009, as part of the annual network plan and require monitors to be operational by January 1, 2010.
- A plan for establishing source-oriented Pb monitoring sites in accordance with the requirements of appendix D to this part for Pb sources emitting equal to or greater than 0.50 tpy but less than 1.0 tpy shall be submitted to EPA no later than July 1, 2011 and require monitors to be operational by December 27, 2011.

(a)(5) A plan for establishing NO_2monitoring sites in accordance with the requirements of appendix D to this part shall be submitted to the Administrator by July 1, 2012 and require all monitors to be operational by January 1, 2013.
(a)(6) A plan for establishing SO_2monitoring sites in accordance with the requirements of appendix D to this part shall be submitted to EPA by July 1, 2011 as part of the annual network plan and require for all SO_2monitoring sites to be operational by January 1, 2013.
(a)(7) A plan for establishing CO monitoring sites in accordance with the requirements of appendix D (section 4.2) to this part shall be submitted to the EPA at least six months prior to the date such monitors must be established as required by section 58.13.

- CO monitors in CBSAs having 2.5 million persons or more are required to be operational by January 1, 2015 and therefore a plan for these must be submitted by July 1, 2014 [40 CFR 58.13(e)(1)].
- Other CO monitors are required to be operational by January 1, 2017 and therefore a plan for these must be submitted by July 1, 2016 [40 CFR 58.13(e)(2)].

(b) The annual monitoring network plan must contain the following information for each existing and proposed site:

(1) AQS site identification number.
(2) Location of each site: street address and geographical coordinates.
(3) Sampling and analysis method(s) for each measured parameter.
(4) Operating schedules for each monitor.
(5) Any proposals to remove or move a monitoring station within a period of 18 months following plan submittal.
(6) Monitoring objectives and spatial scale of representativeness for each monitor as defined in Appendix D.
(7) Identification of sites suitable and sites not suitable for comparison against the annual PM2.5 NAAQS as described in § 58.30.
(8) MSA, CBSA, CSA or other area represented by the monitor
(9) The designation of any Pb monitors as either source-oriented or non-source-oriented according to Appendix D to 40 CFR part 58.
(10) Any source-oriented monitors for which a waiver has been requested or granted by the EPA Regional Administrator as allowed for under paragraph 4.5(a)(ii) of Appendix D to 40 CFR part 58.

Comment [EF1]: We will need to reevaluate the Expanded list of information below concerning sections of App A, C, D, & E that we think should be included in the network plan.

(11) Any source-oriented or non-source-oriented site for which a waiver has been requested or granted by the EPA Regional Administrator for the use of Pb-PM_{10}monitoring in lieu of Pb-TSP monitoring as allowed for under paragraph 2.10 of Appendix C to 40 CFR part 58.

(12) The identification of required NO_2monitors as either near-road or area-wide sites in accordance with appendix D, section 4.3 of this part.

(c) Document how states and local agencies provide for the review of changes to a PM2.5 monitoring network that impact the location of a violating PM2.5 monitor or creation/change to a community monitoring zone, including a description of the proposed use of spatial averaging for the purposes of making comparisons to the annual PM2.5 NAAQS as set forth in Appendix N to Part 50 of this chapter. The affected state or local agency must document the process for obtaining public comment and include any comments received through the public notification process within their submitted plan.

(d) The State, or where applicable local, agency shall perform and submit to the EPA Regional Administrator an assessment of the air quality surveillance system every 5 years to determine, at a minimum, if the network meets the monitoring objectives defined in appendix D to this part, whether new sites are needed, whether existing sites are no longer needed and can be terminated, and whether new technologies are appropriate for incorporation into the ambient air monitoring network. The network assessment must consider the ability of existing and proposed sites to support air quality characterization for areas with relatively high populations of susceptible individuals (e.g., children with asthma), and, for any sites that are being proposed for discontinuance, the effect on data users other than the agency itself, such as nearby States and Tribes or health effects studies. For PM2.5, the assessment also must identify needed changes to population-oriented sites. The State, or where applicable local, agency must submit a copy of this 5-year assessment, along with a revised annual network plan, to the Regional Administrator. The first assessment is due July 1, 2010.

(e) All proposed additions and discontinuations of SLAMS monitors in annual monitoring network plans and periodic network assessments are subject to approval according to §58.14.

II. Expanded List of Information Required for Network Plan Based on 40 CFR 58.10

(a) (1)

- Appendix A
  - Precision/Accuracy reports submitted to AQS: Y/N
  - Annual data certification submitted: Y/N
  - Frequency of flow rate verification for manual PM samplers audit, App A, 3.3.2: e.g. weekly, bi-weekly, monthly? (can be quarterly for high volume samplers)
  - Frequency of flow rate verification for automated PM analyzers audit, App A, 3.2.3: e.g. weekly, bi-weekly, monthly?
  - Frequency of one-point QC check, App. A, 3.2.1 (gaseous instruments): e.g. daily, weekly, bi-weekly?
  - Last Annual Performance Evaluation, App. A, 3.2.2 (gaseous instruments): date
  - Last two semi-annual flow rate audits for PM monitors, App A 3.2.4 and 3.3.3 (automated and manual): dates
  - PEP audits: date
  - NPAP audit: date
- Appendix C
  - Instrument/monitoring method for each monitor: instrument model

Start date for each monitor: date

- Appendix D
  - Monitoring objective for each monitor (same as (b) (6)): list objective
  - Spatial scale of representativeness for each monitor (same as (b) (6)): list scale
  - Sampling season: dates
  - Network meets minimum number of monitors required?
    - For each pollutant consider MSA, population, design value, # required, # operating
    - Map displaying location of monitoring sites
- Appendix E
  - For each site:
    - Distance of site from nearest road: meters
    - Traffic count of nearest road: #
    - Groundcover: paved, vegetated, etc.

- For each monitor:
    - Probe height: meters
    - Distance from supporting structure: meters or N/A
    - Distance from obstructions on roof: meters or N/A
    - Distance from obstructions not on roof: meters or N/A
    - Distance from trees: meters or N/A
    - Distance to furnace or incinerator flue: meters or N/A
    - Distance between collocated monitors: meters or N/A
    - Unrestricted airflow: degrees
    - Probe material (if applicable)
    - Residence time (if applicable): s or N/A

– Statement of purpose for each monitor: provide with site overview

(a) (2)

– List of modifications to SLAMS network. Include evidence of public comment (if provided) and identify whether changes were made to the plan subsequent to the comment opportunity.

(b)

(1) AQS site identification number for each site
(2) Location of each site: street address and geographic coordinates
(3) Sampling and analysis method(s) for each measured parameter
(4) Operating schedule for each monitor
(5) Any proposals to remove or move a monitoring station within a period of 18 months following plan submittal
(6) Monitoring objectives and scale of representativeness for each monitor as defined in Appendix D
(7) Identification of sites suitable and sites not suitable for comparison to the annual PM2.5 NAAQS as described in Part 58.30
(8) MSA, CBSA, CSA or other area represented by the monitor

(c) Document how states and local agencies provide for the review of changes to a PM2.5 monitoring network that impact the location of a violating PM2.5 monitor or creation/change to a community monitoring zone.

Basic Monitoring Objectives (40 CFR 58 App. D 1.1)

(a) Provide air pollution data to public in a timely manner
(b) NAAQS comparision
(c) Research support

Acceptable AQS Coding for Site Types (40 CFR 58 App. D 1.1.1)

EXTREME DOWNWIND
HIGHEST CONCENTRATION
MAX OZONE CONCENTRATION
MAX PRECURSOR EMISSIONS IMPACT
POPULATION EXPOSURE
SOURCE ORIENTED
UPWIND BACKGROUND
GENERAL/BACKGROUND
REGIONAL TRANSPORT
WELFARE RELATED IMPACTS
QUALITY ASSURANCE
OTHER

Site types (monitoring objective types) can be found in the AQS coding manual (Section 5.4.8) at:
http://www.epa.gov/ttn/airs/airsaqs/manuals/AQS%20Data%20Coding%20Manual.pdf

Acceptable AQS Coding for Monitor Types

IMPROVE
INDEX SITE
INDUSTRIAL
NATTS
NON-EPA FEDERAL
NON-REGULATORY
PAMS
PROPOSED NCORE
QA COLLOCATED
SLAMS
SPECIAL PURPOSE
SUPLMNTL SPECIATION
TRENDS SPECIATION
TRIBAL MONITORS
UNOFFICIAL PAMS

Monitor types can be found at: http://www.epa.gov/ttn/airs/airsaqs/manuals/codedescs.htm

Method Codes

Method codes (Protocals w/ Sampling Methodology) can be found at: http://www.epa.gov/ttn/airs/airsaqs/manuals/codedescs.htm

Parmeter Codes

Parameter codes (Pollutant Codes) can be found at: http://www.epa.gov/ttn/airs/airsaqs/manuals/codedescs.htm

$PM_{2.5}$ Sampling Frequency – 40 CFR 58.12

- 1-in-3 day schedule required for manual FRMs at required SLAMS stations
- Agencies may request approval from the Regional Administrator for a 1-in-6 day schedule for manual FRMs at required SLAMS stations which also have a continuous monitor operating.
- Must retain the 1-in-3 day schedule for the following required sites:
    - SLAMS that determine an area's design value and are within ± 10 percent of either the annual or the 24-hour NAAQS.
    - Required site that exceeded the 24-hour NAAQS at one or more times a year for three years.
    - A daily sampling schedule is required for required SLAMS that determine an area's design value and are within ± 5 percent of either the annual or the 24-hour NAAQS.

PM10 SAMPLING FREQUENCY ANALYSIS

(1) 40 CFR 50 APP. K 2.3 (a) explains the data requirements for demonstrating attainment with the NAAQS.

40 CFR 58.12 specifies the required minimum frequency of sampling for PM_{10}. For the purposes of making comparisons with the particulate matter standards, all data produced by State and Local Air Monitoring Stations (SLAMS) and other sites submitted to EPA in accordance with the part 58 requirements must be used, and a minimum of 75 percent of the scheduled PM_{10}samples per quarter are required.

(2) 40 CFR 58.12 (e) explains how and when sampling frequency should be considered.

For PM_{10}samplers, a 24-hour sample must be taken from midnight to midnight (local standard time) to ensure national consistency. **The minimum monitoring schedule for the site in the area of expected maximum concentration shall be based on the relative level of that monitoring site concentration with respect to the 24-hour standard as illustrated in Figure 1.** If the operating agency demonstrates by monitoring data that during certain periods of the year conditions preclude violation of the PM_{10}24-hour standard, the increased sampling frequency for those periods or seasons may be exempted by the Regional Administrator and permitted to revert back to once in six days. The minimum sampling schedule for all other sites in the area remains once every six days. **No less frequently than as part of each 5-year network assessment, the most recent year of data must be considered to estimate the air quality status at the site near the area of maximum concentration.** Statistical models such as analysis of concentration frequency distributions as described in "Guideline for the Interpretation of Ozone Air Quality Standards," EPA–450/479–003, U.S. Environmental Protection Agency, Research Triangle Park, NC, January 1979, should be used. Adjustments to the monitoring schedule must be made on the basis of the 5-year network assessment. The site having the highest concentration in the most current year must be given first consideration when selecting the site for the more frequent sampling schedule. Other factors such as major change in sources of PM_{10}emissions or in sampling site characteristics could influence the location of the expected maximum concentration site. **Also, the use of the most recent 3 years of data might, in some cases, be justified in order to provide a more representative database from which to estimate current air quality status and to provide stability to the network. This multiyear consideration reduces the possibility of an anomalous year biasing a site selected for accelerated sampling.** If the maximum concentration site based on the most current year is not selected for the more frequent operating schedule, documentation of the justification for selection of an alternative site must be submitted to the Regional Office for approval during the 5-year network assessment process. **Minimum data completeness criteria, number of years of data and sampling frequency for judging attainment of the NAAQS are discussed in appendix K of part 50 of this chapter.**

(3) Figure 1 in 58.12 illustrates the ratios for PM_{10} sampling frequency

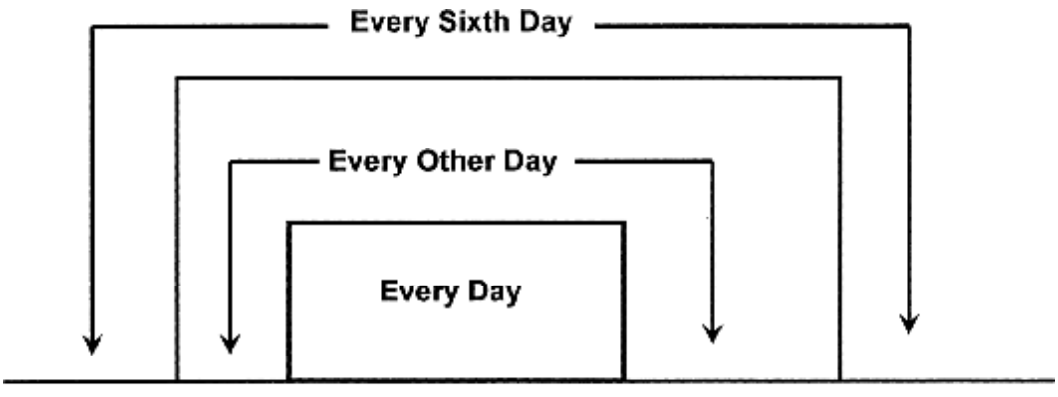

Figure 1 – Ratio to Standard

(4) After discussions with OAQPS, we have interpreted "relative level of that monitoring site concentration" (the 58.12 (e) language) to mean the "design concentration", as discussed in Section 6.3 of the PM_{10} SIP Development Guidance (EPA-450/2-86-001).

(5) Table 6.1 of Section 6.3 in the guidance explains how to choose a "design concentration", which is based on the number of daily samples available for the three year period.

TABLE 6-1

TABULAR ESTIMATION OF PM_{10} DESIGN CONCENTRATIONS

Number of Daily Values	Rank of Upper Bound	Rank of Lower Bound	Data Point Used for Design Concentration
≤ 347	-	1	Highest Value
348 - 695	1	2	Second Highest Value
696 - 1042	2	3	Third Highest Value
1043 - 1096	3	4	Fourth Highest Value

(6) For example, if the sampler is operating on a 1 in 6 day schedule, the "design concentration" would be the 1st max value in that dataset. This would then be compared to the following ratios in Figure 1 of 58.12 to determine the required sampling frequency (ratios are compared to the 24 hour standard, 150 μg/m^3, which is rounded to the nearest 10 μg/m^3)

Ratio

135– 180 = **EVERYDAY**

120 – 135 OR **180 – 210** = **1 IN 3**

<120 OR **>210** = **1 IN 6**

$PM_{2.5}$ Collocation – 40 CFR 58 Appendix A Section 3.2.5, 3.3.5

- Each FRM method designated as primary monitors
  - Collocate at 15 percent of monitors (values of 0.5 or greater round up)
  - Must have at least one collocated monitor per PQAO
  - Collocated monitor must be same method designation
- Each FEM method designated as primary monitors
  - Collocate at 15 percent of monitors (values of 0.5 or greater round up).
  - Half of collocated monitors must be FRMs and half must be FEMs of the same method.
  - The first collocated monitor must be an FRM.
  - If an odd number of collocated monitors are required, the additional monitor must be a FRM.
- Collocated FRM samplers are required to run on a 12-day sampling frequency.
- 80 percent of the collocated samplers should be located at sites within ± 20 percent of either the annual or 24-hour NAAQS.
- If an agency has no sites within ± 20 percent of either the annual or 24-hour NAAQS, 60 percent of the collocated monitors should be located at sites with annual mean concentrations among the 25 percent highest in the network.

PM_{10} Collocation – 40 CFR 58 Appendix A Section 3.3.1

- Each manual method designation in the PQAO must have 15 percent of monitors collocated
- Collocation for TSP and PM_{10} samplers must be considered separately.
- Collocated sites must be within the highest 25 percent annual mean concentrations, unless alternatives are approved by the Regional Administrator.

Pb Collocation – 40 CFR 58 Appendix A Section 3.3.4.3

- PQAOs with only non-source-oriented NCore Pb sites:
  - Implement following section 3.2.6
    - EPA ensures that collocation is met for the national network. No per-PQAO minimums.
  - The collocated monitor must be the same method designation as the primary monitor.
- All other PQAOs:
  - Implement following sections 3.3.1 of this appendix
  - First collocated Pb site selected must be the site measuring the highest Pb concentrations in the network.
  - Each method designation in the PQAO must have 15 percent (or at least one) of monitors collocated.
  - Collocated samplers are required to run on a minimum 12-day sampling frequency.

Guidance memos for the use of continuous $PM_{2.5}$ monitors

The following memo from July 24, 2008 describes how to integrate continuous FEM and ARM methods into a SLAMS network, including discussions of appropriate method evaluation periods and data usage. If operating FEMs that are considered non-regulatory, include a justification for this decision.

> Implementing Continuous $PM_{2.5}$ Federal Equivalent Methods (FEMs) and Approved Regional Methods (ARMs) in State or Local Air Monitoring Station (SLAMS) Networks".
> http://www.epa.gov/ttn/amtic/files/ambient/pm25/femarmslam.pdf

The following memo from June 1, 2006 outlines how to report continuous $PM_{2.5}$ data to AQS, including parameter codes for both FEMs and non-FEMs. Please include these parameter codes in the detailed site information table and provide a justification for treatment of non-FEM data as either 88501 or 88502.

> "Technical Note on Reporting $PM_{2.5}$ Continuous Monitoring and Speciation Data to the Air Quality System (AQS)"
> http://www.epa.gov/ttn/amtic/files/ambient/pm25/datamang/contrept.pdf

Minimum Monitoring Requirements.
This network meets the minimum monitoring requirements for all criteria pollutants (Tables 2, 3, 4, 5).

Ozone

(Note: Refer to section 4.1 and Table D-2 of Appendix D to Part 58)

Table 2. Minimum Monitoring Requirements for Ozone.

MSA	County(ies)	Population (year)	8-hr Design Value, DV years, and DV site	Min. # Monitors Required	# Monitors Active	Monitors Needed

Monitors required for SIP or Maintenance Plan:

$PM_{2.5}$

(Note: Refer to section 4.7 and Table D-5 of Appendix D to Part 58)

Table 3a. Minimum Monitoring Requirements for $PM_{2.5}$ SLAMS. (FRM/FEM/ARM, see 40CFR 58 App D Section 4.7.1 and Table D-5)

MSA	County(ies)	Population (year)	Annual Design Value, DV years, DV site	Daily Design Value, DV years, DV site	# SLAMS Monitors Required	# SLAMS Monitors Active	SLAMS Monitors Needed

Table 3b. Minimum Monitoring Requirements for continuous $PM_{2.5}$ monitors. (FEM/ARM and non-FEM, see 40CFR 58 App D Section 4.7.2)

MSA	County(ies)	Population (year)	Annual Design Value, DV years, DV site	Daily Design Value, DV years, DV site	# Continuous Monitors Required	# Continuous Monitors Active	Continuous Monitors Needed

Monitors required for SIP or Maintenance Plan:

PM_{10}

(Note: Refer to section 4.6 and Table D-4 of Appendix D to Part 58)

Table 4. Minimum Monitoring Requirements for PM_{10}.

MSA	County(ies)	Population (year)	Design Concentration*	# Expected Exceedances, years, site	Min. # Monitors Required	# Monitors Active	Monitors Needed

*PM10 SIP Guidance (EPA-450/2-86-001): http://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=P1006IKV.txt

Monitors required for SIP or Maintenance Plan:

NO_2

(Note: Refer to section 4.3 of Appendix D to Part 58)

Table 5. Minimum Monitoring Requirements for NO_2.

MSA	County(ies)	Population (year)	Annual Design Value, DV years, DV site	1-hour Design Value, DV years, DV site	# Monitors Required	# Monitors Active	Monitors Needed

Monitors required for SIP or Maintenance Plan:
Monitors required for PAMS:

SO_2

(Note: Refer to section 4.4 of Appendix D to Part 58)

Table 6. Minimum Monitoring Requirements for SO_2.

CBSA	County(ies)	Population (year)	Total SO_2 (tons per year)	Population Weighted Emissions Index (PWEI)	# Monitors Required	# Monitors Active	Monitors Needed

Monitors required for SIP or Maintenance Plan:

CO

(Note: Refer to section 4.2 of Appendix D to Part 58)

Table 7. Minimum Monitoring Requirements for CO.

MSA	County(ies)	Population (year)	8-hr Design Value, DV years, DV site	1-hour Design Value, DV years, DV site	# Monitors Required	# Monitors Active	Monitors Needed

Monitors required for SIP or Maintenance Plan:

Pb

(Note: Refer to section 4.5 of Appendix D to Part 58)

Table 8. Minimum Monitoring Requirements for Pb.

NCore Pb Monitoring

NCore Site Name	CBSA	Population (year)	Min. # Monitors Required	# Monitors Active	Monitors Needed

Source-Oriented Pb Monitoring (including airports)

Source Name	Address	Pb Emissions (tons per year)	Emission Inventory Source & Data Year	Max 3-Month Design Value*	DV date (third month, year)	Min. # Monitors Required	# Monitors Active	Monitors Needed

*consider data from the past 3 years.

Monitors required for SIP or Maintenance Plan:

Detailed Site Information

Local site name				
AQS ID				
GPS coordinates	decimal degrees			
Address				
County				
Distance to roadways	meters			
Traffic count				
Groundcover				
Representative statistical area				
Pollutant				
Basic monitoring objective				
Site type				
Monitor type				
Method code				
FRM/FEM				
Parameter code				
Spatial scale				
Monitoring start date	date			
Sampling frequency				
Sampling season				
Probe height	meters			
Distance from supporting structure	meters			
Distance from obstructions on roof	meters			
Distance from obstructions not on roof	meters			
Distance from trees	meters			
Distance to furnace or incinerator flue	meters			
Distance between collocated monitors	meters			
Unrestricted airflow	degrees			
Probe material (gaseous)				
Residence time (gaseous)	seconds			
Will there be changes within the next 18 months?	Y/N			
Is it suitable for comparison against the annual PM2.5?	Y/N			
Frequency of flow rate verification for manual PM samplers audit				
Frequency of flow rate verification for automated PM analyzers audit				
Frequency of one-point QC check (gaseous)				
Last Annual Performance Evaluation (gaseous)	date			
Last two semi-annual flow rate audits for PM monitors	date(s)			